

CLAIMS

1. A binocular telescope with a photographing function, said binocular telescope having a pair of observation optical systems for which the interpupillary distance can be adjusted, and a photographing optical system, said pair of observation optical systems being utilized as a focusing device for said photographing optical system, said binocular telescope comprising:

a first focusing mechanism that focuses said pair of observation optical systems so as to observe an object through said pair of observation optical systems;

a second focusing mechanism that focuses said photographing optical system so as to photograph said object through said photographing optical system;

an association mechanism that associates said first and second focusing mechanisms with each other in such a manner that said pair of observation optical systems and said photographing optical system are always kept in a focused state;

a pair of reticle elements on which reticles are formed, and which are provided in said pair of observation optical systems for focusing said pair of observation optical systems with a predetermined dioptric power during an operation of said first and second focusing mechanisms, each of said pair of reticle elements being arranged at an in-focus position

of an objective lens system of said observation optical system,
a position of an ocular lens system of said observation
optical system being adjustable relative to the position of
said reticle element so as to adjust the dioptric power; and

5 an interpupillary distance adjusting mechanism for
adjusting the distance between the optical axes of said pair
of observation optical systems;

when the optical axes of said pair of observation
optical systems are made completely coincident with the
10 interpupillary distance of the user by using said
interpupillary distance adjusting mechanism so that the
reticle images of said pair of reticle elements are fused,
the fused reticle images are geometrically non-coordinate
with each other.

15 2. A binocular telescope according to claim 1, wherein the
fused reticle images show point symmetry with respect to an
imaginary optical axis, defined by superposing the optical
axes of said pair of observation optical systems, when said
reticle images are fused.

20 3. A binocular telescope according to claim 1, wherein the
fused reticle images show line symmetry with respect to a
straight line intersecting an imaginary optical axis, defined
by superposing the optical axes of said pair of observation
optical systems, when said reticle images are fused.

25 4. A binocular telescope according to claim 1, wherein each

of said reticles comprises at least one line segment.

5. Abinocular telescope according to claim 4, wherein each of said reticles comprises at least two line segments, which extend radially from the optical axis of the corresponding observation optical system.

6. Abinocular telescope according to claim 4, wherein each of said reticles comprises at least two line segments, which extend radially from a circular area encircling the optical axis of the corresponding observation optical system.

7. Abinocular telescope according to claim 1, wherein each of said reticles comprises at least one geometrical figure.

8. Abinocular telescope according to claim 7, wherein each of said reticles comprises a geometrical figure the center of which is coincident with the optical axis of the corresponding observation optical system, said geometrical figures being similar figures.

9. Abinocular telescope according to claim 1, wherein each of said reticles comprises at least one dot.

10. Abinocular telescope according to claim 9, wherein each of said reticles comprises a plurality of dots which are arranged on a plane vertical to the optical axis of the corresponding observation optical system, said plurality of dots being aligned on line segments which are symmetrical with respect to a straight line on said plane.

11. Abinocular telescope according to claim 9, wherein one

of said reticles comprises a dot which is aligned on the optical axis of the corresponding observation optical system, and the other of said reticles comprises a plurality of dots which are arranged on a plane vertical to the optical axis of the corresponding observation optical system, and arranged
5 around the optical axis.

12. A binocular telescope according to claim 1, wherein said association mechanism comprises a rotary wheel member having a manually operated rotary wheel; each of said pair of
10 observation optical systems comprises two optical system elements that are movable along the optical axis of said observation optical system to focus said observation optical system; said first focusing mechanism forms a first movement-conversion mechanism for converting a rotational
15 movement of said rotary wheel member into a relative back-and-forth movement of said two optical system elements; said photographing optical system is movable relative to an imaging plane along the optical axis of said photographing optical system to focus said photographing optical system;
20 and said second focusing mechanism forms a second movement-conversion mechanism for converting a rotational movement of said rotary wheel member into a back-and-forth movement of said photographing optical system elements relative to said imaging plane.

25 13. A binocular telescope according to claim 12, wherein

said rotary wheel member comprises a rotary wheel cylinder in which a lens barrel is housed so as to be movable along the central axis of said rotary wheel cylinder; said photographing optical system is housed in said lens barrel; 5 said second movement-conversion mechanism comprises a first cam groove formed in one of said rotary wheel cylinder and said lens barrel, and a first cam follower formed in the other of said rotary wheel cylinder and said lens barrel; and said first cam groove is formed in such a manner that a rotational 10 movement of said rotary wheel cylinder is converted into a back-and-forth movement of said lens barrel along the central axis of said rotary wheel cylinder.

14. A binocular telescope according to claim 13, wherein said first movement-conversion mechanism comprises a second 15 cam groove formed on an outer surface of said rotary wheel cylinder, an annular member that has a second cam follower engaged with said first cam groove and that is attached on an outer surface of said rotary wheel cylinder to move along the central axis of said rotary wheel cylinder, and a movement 20 transmission mechanism that transmits the movement of said annular member to one of said two optical system elements of each of said pair of observation optical systems.

15. A binocular telescope according to claim 12, wherein said pair of observation optical systems are mounted on an 25 optical system mount plate that comprises first and second

plates that are movable relative to each other, one of said pair of observation optical systems is placed on said first plate, and the other of said pair of observation optical systems is placed on said second plate, so that the distance
5 between the optical axes of said pair of observation optical systems is adjusted by changing the relative positions of said first and second plates.

16. A binocular telescope according to claim 15, wherein said first and second plates are linearly moved relative to
10 each other, so that the optical axes of said pair of observation optical systems are moved in a predetermined plane, whereby the distance between the optical axes of said pair of observation optical systems is changed.